6. Ishita

Program Name: Ishita.java **Input File: ishita.dat**

Ishita has drawn out a long sequence of parenthesis. He would like to cut the sequence into pieces such that the parentheses on every piece are balanced. A sequence of parentheses is considered balanced if every '(' can be matched by a unique ')' that comes later in the sequence..

Given the sequence that Ishita has drawn out, determine how many ways there are to cut the sequence.

Input:
The first line consists of a number T (1 <= T <= 10), representing the number of test cases that follow.
Each test case will consist of a single line of up to 30 '(' and ')' characters describing the sequence Ishita drew.

Output: For each test case, output the number of ways there are to cut the sequence

Sample input:
```
3
()(())()
())(()
()()(((())))(())
```

Sample output:
```
3
0
7
```

Explanation for sample case 1:
Three ways to cut, pieces separated by period:
()(()).()
()(())()
()((())).()